



ISSN(Online): 2320-9801
ISSN (Print) : 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 7, Issue 5, May 2019

Novel Method of Detecting Unhealthy Plant Leaves Using Image Processing

Ankita Chaudhari, Pranali Thorat, Aboli Kasar, Sanyukta Patil, Prof.D.S.Uplaonkar

B. E Students, Department of Computer Engineering, JSPM Narhe Technical Campus, Pune, India

Professor Department of Computer Engineering, JSPM Narhe Technical Campus, Pune, India

ABSTRACT: Disease Detection of plants plays an important role in the farm related field on which we need to focus more. If proper care is not taken in this area, it may lead to serious effects on plants and negatively affects the productivity and quality. Here a project is proposed with an idea of detecting plant disease using image processing. Image processing is used for find out affected area of disease. The decision making ability of an expert also depends on his/her physical condition, such as tiredness eye sight, work pressure, climate and experience. So this methods is time consuming and less producing a lot with very little waste.

KEYWORDS: Image acquisition, Segmentation, feature extraction, classification, classifier

I. INTRODUCTION

Plant disease identification by visual way is more difficult job and at the same time less accurate and can be done only in limited areas. Whereas if automatic detection way of doing things is used it will take less efforts, less time and more perfect. In

plants, some general sickness are brown and yellow spots, or early and late burn, and other are fungal, viral and bacterial diseases. Image processing is the way of doing things which is used for measuring affected area of disease, and to figure out the difference in the color of the affected area. There will be great importance for the green production safety through using the computer image processing technology to watch leaf, in order to gain artificial intelligence prevention. Usually farmers identify the diseases by naked eye observation method. In this method disease is visually detected by the experts, who have the ability to detect small changes in leaf color. Some researchers have used image processing techniques for fast and accurate detection of leaf sicknesses. The steps followed in detection of leaf diseases are image acquisition, image Pre-processing, disease spot segmentation, feature extraction and disease classification. The quality of being very close to the truth value of result depends on methods used for disease spot detection. Image segmentation is the process of dividing an image into different parts. This is used to identify related information in digital images. In order to carefully study the plant leaf diseases, there is a need to fetch the features of these images, which include division of something into smaller parts.

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijircce.com

Vol. 7, Issue 5, May 2019

II. EXISTING SYSTEM

Manual Strategy describes the which individual has the information of the plant leaf has been called for find the truth about the plant and the leaf disease is recognized by the learning and experience of that individual and afterward the fitting bug killing chemical is proposed by tha

t individualColor change structure is RGB image convert to HSI color space representation. The algorithm can be used to classify the leaves and classified results are separated using Arduino based conveyor belt system.

1. Proposed System:

The goal is to recognize the sickness of plant leaf with high quality of being done perfectly as contrast with current methods.

- RGB image acquisition.
- Convert the RGB image to Gray scale format.
- Computing the texture using GLCM method.
- Classification of disease.

2. Motivation:

Normally to find disease of leaf need an Experts to find out the disease.The instance of noticing experts is the main approach put into use for detection and identification of plant Sicknesses.the nakedeye observation is time consuming andexpensive. To remove this bad effects or results in existing system we create this system which reducesthe time and cost.

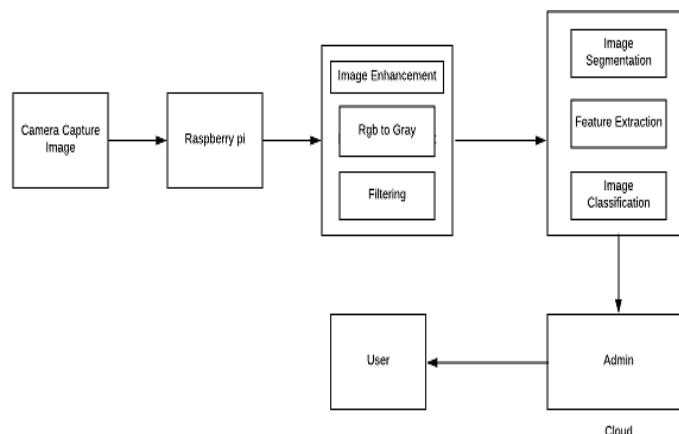


Fig: System Architecture

International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijirccce.com

Vol. 7, Issue 5, May 2019

Image Acquisition: The aim of image acquisition is to transform a real world data into array of numerical data which could be later manipulated on a computer. In this pi camera is used to capture images. for the examination.

Image Enhancement:It deals with enhancing the images. It tries to improve an image so that it looks better than previous. After RGB picture capturing the next step is to picture pre-preparing in this RGB Image is converted into Gray Scale Image. Median Filtering technique is used to remove noise present in the image.Median filter has very good response over impulse noise and salt and pepper noise, because of its appearance as white and black dots, superimposed on an image.

Feature Extraction:In the observation of unhealthy images, there is have to remove the sicknesses. This procedure is called highlight extraction. There are Three ways of doing things for include extraction which are mostly used. These are as per the following.

- Texture Based Feature Extraction
- Shape Based Feature Extraction
- Color Based Feature Extraction

Inthat utilized just one surface that is:

- Texture Based Feature Extraction

Classifier:The objective of SVM(Support vector Machine)is to find a hyperplane.Hyperplane means a decision boundry separating the touples of one class from another. It uses a non-linear mapping to transform the original training data into a higher dimension. In SVM if the output of the linear function is grater than1,it is defined as one class and if the output is -1 it is identified with another class.

III. RESULTS

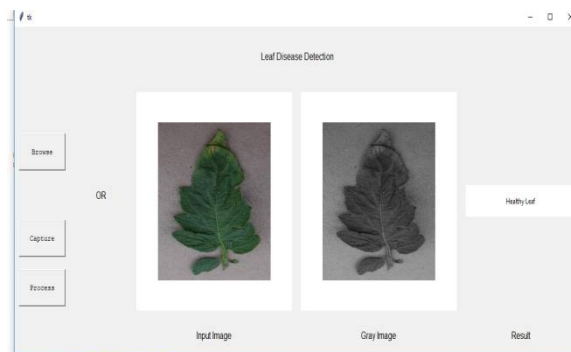


Fig. Healthy Leaf

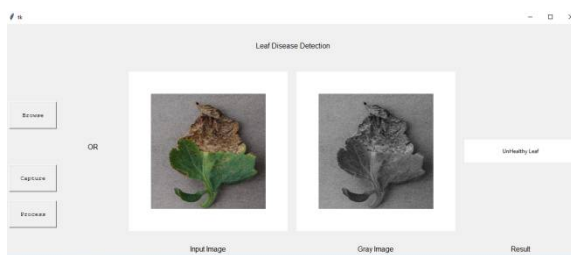


Fig.Unhealthy Leaf



International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijirce.com

Vol. 7, Issue 5, May 2019

```

-----Begin-----
*****Image parameters*****
[114.49432354307, 7.489460338932481, 124.2612464359486, 7.864988146291131, 126.249460974492, 8.1418141771454, 148.4181912779626, 7.899271299460303, 11
66.272847870070, 8.20991216944811, 148.46246447006, 8.87718809652121, 148.2401287194808, 8.816342321263891, 171.49780507872074, 9.21643018722329, 178.1
8820710256, 9.794348460234221, 180.1848389793307, 8.4564026979444, 181.2010735744895, 8.10139331482911, 182.2110271899404, 10.149460873034855, 180.484601
9811022, 8.7714689224694, 114.4778780464663, 10.32018448038937, 124.3397886118975, 8.71816383207171, 126.6710181297978, 10.5425276024772, 148.060813
881616, 11.16154869583811, 137.35832291702, 11.0489832410318, 140.3326242411194, 8.876111118974, 142.477247446087, 11.3012426111021, 148.4804856
88194, 10.201613382474, 124.3302708601097, 11.3901971832891, 148.748171012776, 10.899484663848, 170.15303746707, 11.8741128746464, 154.9624248
7491, 11.7411023204721, 124.431031492513, 12.1897791783962, 130.58138464404, 10.3301242111023, 148.5761018194284, 10.9420830248394, 132.8444258303
916, 11.2375436112421, 123.144021748707, 12.4237858387878, 124.29782076771464, 12.48070897480311, 148.47384891374, 12.7034891702081, 148.212275467194
5, 10.10824979387, 137.607586122047, 12.4403291834307, 140.036463207415, 11.56813694891891]
*****Image parameters*****
Contour = 83.14602748707
BoundingBox = 11.6279586897878
Homogeneity = 0.18168890174711
Entropy = 0.0142703284148148
Correlation = 0.88648891841418
*****
[83.14602748707, 11.6279586897878]
-----End-----

```

Activate Windows
Go to Settings to activate Windows.

Fig.Feature Extraction

IV. CONCLUSION

The main approach of this is to recognize the disease. Speed and accuracy are the important characteristics required for disease detection. Hence the extension of this work will focus on developing the advanced algorithms for fast and accurate detection of leaves with disease.

REFERENCES

[1] Ms.Nidhi Rajesh Savaji,RaviKiranRajbure "Plant Disease Detection Using Image Processing ," 2018

[2]Vijaisingh, Varsha, A K Misra, "Detection of unhealthy region of plant leaves using Image Processing and Genetic Algorithm",International Conference on Advances in Computer Engineering and Applications, 2015.

[3]Ms. Kiran R. Gavhale, Prof. UjjwalaGawande, and Mr. Kamal O. Hajari,Unhealthy Region of Citrus Leaf Detection using Image Processing Techniques, IEEE International Conference on Convergence of Technology(I2CT), Pune, pp 1-6, 2014

[4]H.Sabrol and K.satish"Tomato Plant Disease Classification in Digital Image using classification Tree" ,International Conference on Communication and Signal Processing, April 6-8,2016.

[5]Sujatha R*,Gariné Uma Akhil"Leaf Disease detection using image Processing",r.sujatha@vit.ac.in,March 2017

[6]R.N.MUHAMMAD ILYAS *et al*,"An Enhanced technique for texture based image retrieval Using Framelet Transform With GLCM",International Journal of Computer Science and Mobile Computing, Vol.6 Issue.1, Jan- 2017, pg. 150-157

[7]RajkumarGoel,VineetKumar,"A Review Of Feature Extraction Techniques for Image Analysis",International Conference on Advances in Computational Techniques and Research PracticesNoida Institute of Engineering & Technology, Greater Noida Vol. 6, Special Issue 2, February 2017

[8]Er. Kanchan Sharma, Er. Priyanka ,Er. AditiKalsh, Er.KulbeerSaini,"GLCM and its Features",International Journal of Advanced Research in Electronics and Communication Engineering (IJARECE) Volume 4, Issue 8, August 2015

[9]SachinShinde,BharatTidke,"Improved K-means Algorithm for Searching Research Papers", International Journal of Computer Science & Communication Networks, Vol 4(6),197-202

[10]H.AI-Hiray,S.Bani Ahmad, M.Barik, "Fast And Accurate Detection And Classification of Plant Diseases",International Journal of Computer Applications (0975 – 8887)Volume 17– No.1, March 2011

[11]PriyankaDilipGawali,Dr.G.U.Kharat and Prof.S.H.Bodake"Plant Leaf Disease Detection Using Processing",Volume: 02 Issue: 04 April– 2017 (IJRIER)

[12]SulekhSingh,Er.RachanaRajput,"Implementation to detect and Classification Of Fungal Disease in Grapes Leaves Using The Genetic Algorithm",International Journal Of Advance Research in Science3 And Engineering, Volume No.06,Special Issue No.(01),Nov 2017 www.ijarse.com

[13]PrakashM.Mainkar,ShreekantGhorpade,MayurAdwadkar,"Plant Leaf Disease Detection And classification using Image Processing Techniques",International Journal of Innovative and Emerging Research in Engineering Volume 2, Issue 4, 2015

[14]K.NarishmhaReddy ,B.Polaiah, N. Madhu," A Literature Survey:Plant Leaf Disease Detection Using Image Processing Techniques",IOSR Journal of Electronics and Communication Engineering (IOSR-JECE) e-ISSN: 2278-2834,p- ISSN: 2278-8735.Volume 12, Issue 3, Ver. II (May - June 2017), PP 13-15 www.iosrjournals.org

[15]Rahul Das,Kanchana V*,PoojaV*,"Identification Of Plant Leaf Diseases Using Image Processing Techniques",2017 IEEE International Conference on Technological Innovations in ICT For Agriculture and Rural Development